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HOUSEKEEPERS' CHAT

Friday, June 26, 1936

(FOR BROADCAST USE ONLY)

Subject: "THE RARE ROAST." Information from the Bureau of Home Economics, United States Department of Agriculture.

--ooOoo--

Only last week we were talking about the shrinkage problem in summer clothes. Now the foods people tell me that the shrinkage problem is also an important consideration in cooking, particularly in cooking meat. In the case of a roast or a steak, they say too much heat -- that is, too high a temperature, or too long a cooking time, or both -- shrinks the meat and hardens it, as it does all protein foods. So cooking temperatures need careful control.

Since beef is the best buy in the meat markets nowadays, and since you probably are planning your Sunday dinner today, suppose I report to you what the meat-cookery people at the Bureau of Home Economics have learned about shrinkage in the roasting of beef. You know, opinions have differed a good deal not only as to the best temperature for roasting but also as to the best method. One group of cooks believes in browning or searing the roast at the start of cooking. Another group believes that the results are just as good if the meat browns gradually in the oven as it roasts.

To solve some of these differences of opinion, meat roasting tests began at the Bureau of Home Economics. And I am going to tell you now about 4 beef roasts that went to the oven -- and what happened to them. These roasts all were prime ribs of beef, and all weighed at the start exactly 12 and one-fourth pounds. All went into the oven fat-side-up in an uncovered pan with no water added. Each oven used was a ventilated and uninsulated gas oven. Before the roasts went into the oven, the cookery people inserted a meat thermometer in each one so that the thermometer bulb was in the very center of the meat.

These roasts cooked until the meat was what we generally speak of as "rare" in the center. At this point the meat thermometer registered 140 degrees F.

Then the cookery people weighed each roast to find out how much it had shrunk. They also weighed the drippings in the pan, which represented a part of the loss in weight of the roast. The rest of the loss they set down to evaporation.

Well, Roast No. 1 cooked in a hot oven -- 450 degrees -- from start to finish. Roast No. 2 cooked in a slow oven -- 250 degrees -- from start to finish. Roast No. 3 started at a high temperature -- 500 degrees -- but finished slowly at 300 degrees. In other words, Roast No. 3 browned or seared on the outside at the start of its cooking. But Roast No. 4 cooked at moderate temperature -- 350 degrees -- from start to finish.

There are the 4 beef roasts that went into the oven. Now let's see how they came out. First, about shrinkage. Although they all weighed the same at the start -- all were 12 and one-fourth pounds before cooking, Roast No. 1, which cooked in a hot oven, shrunk to 8 and one-fourth pounds. Roast No. 2, which cooked in a slow oven, shrunk to only 10 and three-fourth pounds. Roasts 3 and 4 shrunk but little more. Roast No. 3 -- the one that browned first and then cooked slowly -- weighed 10 pounds after cooking. And Roast No. 4, which cooked at moderate heat, weighed 10 and one-fourth pounds cooked.

The very hot oven caused the most shrinkage by far, you see. But shrinkage is only one of the effects of high temperature and prolonged cooking of meat. The flavor and texture of the roast also depend on controlling the oven-temperature and the cooking-time. Then, the thrifty cook will also consider the amount of fuel she uses to cook her meat.

Roast No. 1, which cooked in a hot oven the entire time, had not only shrunk but had also scorched. It was rare only at the center. Most of it was well-done. The drippings, which weighed 2 pounds, were scorched and unfit for gravy. This roast was in the oven 3 hours and required 95 cubic feet of gas to cook.

Roast No. 2, which cooked at low heat the entire time, was very plump when done, but the outside fat was not crisp. The lean parts were pink and rare to the very edge. The drippings, which weighed only half a pound, were almost pure fat, very pale, and would not give much flavor to gravy. This roast was in the oven 5 hours and the amount of gas consumed was 63 cubic feet.

Roast No. 3, the one that browned first and then finished cooking slowly, was plump and had a crisp brown crust. Most of it was rare, and the drippings were just right for gravy in both color and flavor. The cooking time was 4 hours, gas consumption 74 cubic feet. This roast the cookery people considered a happy medium between the other two.

Roast No. 4 cooked at moderate temperature the entire time. The results and the gas consumption were about the same as Roast No. 3, although the outside fat was not as crisp as that on Roast No. 3 which browned at the start. Roast No. 4 was also a happy-medium product. The gas consumed was 77 cubic feet.

Obviously, the choice of methods, considering both shrinkage and palatability, lies between Roast No. 3, which first browned in a hot oven, and then cooked slowly, and Roast No. 4 which cooked at constant moderate temperature with no browning at the start. You can get good results either way. But the choice may depend on the kind of stove in which the meat is to roast. With a modern gas-oven and with thermometer and mechanical-heat control, you can easily have a high temperature at the start for browning and then reduce the heat to finish the roast. But with other fuel -- with a coal, wood, oil or electric oven -- lowering the temperature quickly is harder, though some cooks manage it by opening the oven door for a few minutes. Unless you can reduce the heat quickly after browning the meat, the constant moderate temperature is best.

Some other day, I'll report what the meat cookery people have to say about cooking a roast well-done instead of rare.

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